Hemoglobin E

E

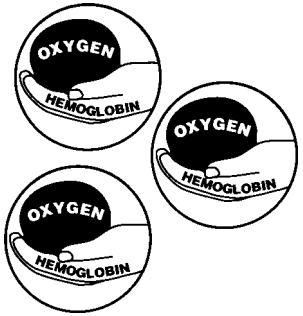
Cover

To understand hemoglobin E, it is helpful to understand a little more about our blood. Hemoglobin E affects a part of the blood called hemoglobin.

Hemoglobin

One role of the blood is to take the oxygen from the air in the lungs and bring it to all parts of the body. The part of the blood that does this job is the red blood cell.

Hemoglobin is the part of the red blood cell that carries the oxygen.

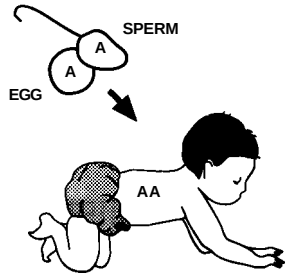


HEMOGLOBIN IN RED BLOOD CELLS CARRIES THE OXYGEN.

The way hemoglobin is made in the body depends on the **genes** a child inherits from both parents. A gene carries instructions, like what color the child's skin or eyes will be. Different genes carry different instructions.

We can inherit genes which cause unusual types of hemoglobin to be made, or genes which interfere with the amount of hemoglobin made.

The usual adult hemoglobin is called hemoglobin A. The less common types of hemoglobin are named by letters, such as hemoglobin S, sickle hemoglobin, or hemoglobin E, or sometimes by names such as hemoglobin Bart's.



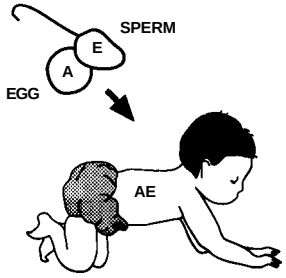
GENES IN THE SPERM OF THE FATHER AND THE EGG OF THE MOTHER DETERMINE THE TYPE OF HEMOGLOBIN.

What is Hemoglobin E?

Hemoglobin E is a type of hemoglobin that is common in people of Southeast Asian ancestry including Thailand, Malaysia, Indonesia, Vietnam, Cambodia, and Laos. People whose ancestors are from southern China, the Phillipines, India, and Turkey may also have hemoglobin E.

Hemoglobin E Trait

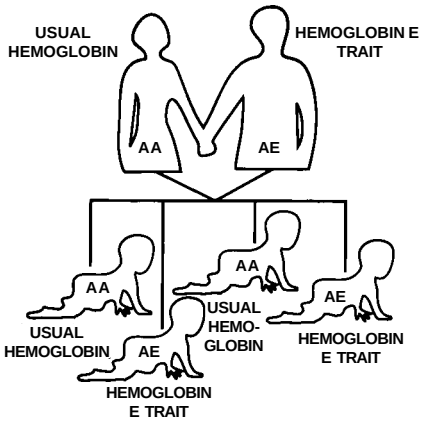
Each child inherits one gene from the mother and one from the father that instructs the body how to make hemoglobin. If an individual inherits one gene for the usual hemoglobin A and one gene for hemoglobin E, they are said to have hemoglobin E trait.



HEMOGLOBIN E TRAIT IS **NOT** A DISEASE AND DOES NOT AFFECT A PERSON'S MENTAL OR PHYSICAL HEALTH.

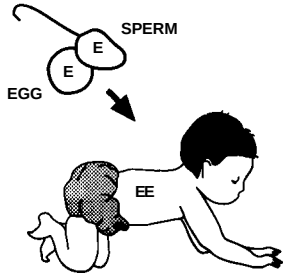
Hemoglobin E trait does cause the size of the red blood cells to be smaller than usual. Doctors sometimes think that a person with small red blood cells should take iron pills. However, hemoglobin E trait alone causes no problems and does not need to be treated with iron pills or any other medicine.

People with hemoglobin E trait may pass the hemoglobin E gene to their children. If only one parent has hemoglobin E trait, there is a 50/50 chance that the children might inherit the trait. The chances are the same with each pregnancy.

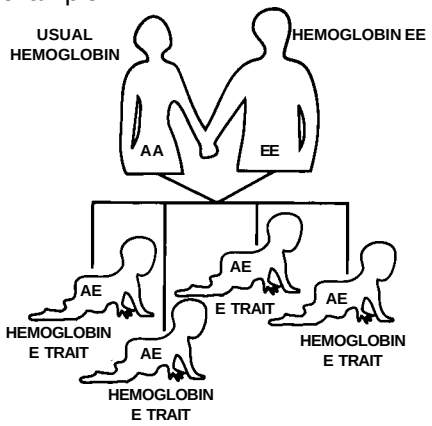


Hemoglobin EE

If a person inherits the hemoglobin E gene from **both** parents, only hemoglobin E is made in the body.

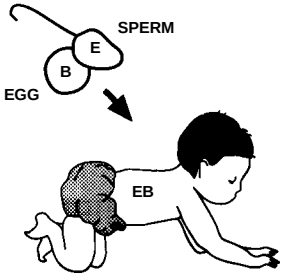


When only hemoglobin E is present, the red blood cells are smaller than usual. Persons with hemoglobin EE will have no health problems but they will pass the gene for hemoglobin E on to their children. If one parent has the usual hemoglobin A, all of the children will have hemoglobin E trait as in the following example:



Hemoglobin E-Beta Thalassemia (E-Beta Thalassemia Major)

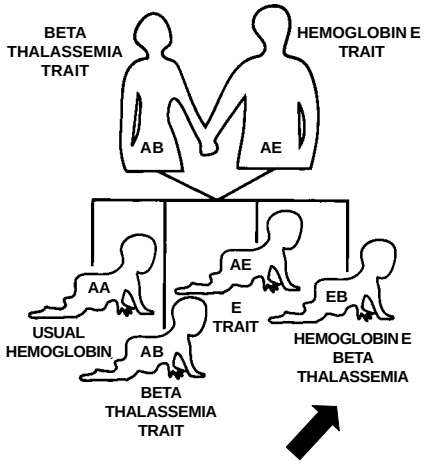
In hemoglobin E-beta thalassemia, an individual inherits one gene for hemoglobin E from one parent and one "beta thalassemia" gene from the other parent. The beta thalassemia gene causes the body to make less than the usual amount of hemoglobin. These two genes together lead to a disease which causes severe destruction of the red blood cells.



Hemoglobin E-beta thalasemmia is a life-threatening disease and there is no known cure. Untreated hemoglobin E-beta thalassemia can result in heart failure from the severe destruction of red blood cells. It can also cause severe enlargement of the liver and spleen, poor growth, and changes in the bones.

Most people with E-beta thalassemia must have blood transfusions in order to live. Most require transfusions about every four weeks. Repeated transfusions can cause problems because of extra iron left in the body or because of infections passed in the blood such as hepatitis. Therapy is used to help prevent problems from the extra iron, but life expectancy for those with hemoglobin E-beta thalassemia is shortened.

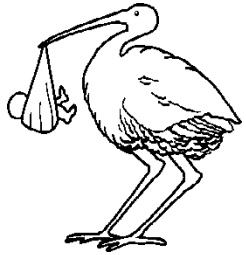
Hemoglobin E-beta thalassemia happens when the gene for hemoglobin E is inherited from one parent and the gene for beta thalassemia is inherited from the other parent as in the following example:



Prenatal Diagnosis of Hemoglobin E-Beta Thalassemia

When one parent has hemoglobin E trait or hemoglobin EE and the other parent has beta thalassemia trait, they might have a child with hemoglobin E-beta thalassemia. A woman can have testing as early as the second month of pregnancy to see if the developing baby has this hemoglobin disease. When the disease is found early in pregnancy, parents can choose whether or not to continue the pregnancy.

It can be helpful for people to know about their hemoglobin type so they can make informed decisions regarding family planning. Testing and counseling can be arranged, and questions answered about sickle cell hemoglobin or any other kind of inherited hemoglobin condition by contacting:



Newborn Screening Program
1610 NE 150th Street
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(206) 361-2902

Washington State Department of Health

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